Hepatitis C

(Previously known as Non-A Non-B Hepatitis, HCV Infection)

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1) THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agent

Hepatitis C is caused by an RNA virus (in the *Flaviviridae* family). Multiple hepatitis C virus (HCV) genotypes exist, with type 1 being most common in the United States.

B. Clinical Description

Hepatitis C is a disease with varying rates of progression. In general, its course is slowly progressive. For people who are recently infected only about 20% will experience any related acute symptoms. Therefore, it is uncommon for people to be diagnosed with HCV infection in the acute stage. About 15–25% of HCV-infected individuals recover spontaneously (reasons for this are still unknown). The remainder develop chronic infection.

Most people are asymptomatic during the first decade or two of chronic hepatitis C. Some patients will experience a range of symptoms including fatigue, headaches, joint aches, muscle aches, nausea, jaundice, loss of appetite, and/or abdominal pain. Of those chronically infected, about 10–20% may eventually develop cirrhosis or cancer of the liver. Cirrhosis can lead to liver failure in some people and predispose to the development of liver cancer. Attachment A at the end of this chapter illustrates the natural history of hepatitis C. Factors related to more serious clinical outcomes include: drinking alcohol; coinfection with hepatitis A, hepatitis B or HIV; and medications or food supplements that harm the liver.

Treatment of chronic hepatitis C with interferon with or without ribavirin is indicated for some individuals and may result in a sustained response with elimination of virus in 20–40% of those receiving a full 6 to 12 months of treatment.

C. Reservoirs

Infected humans are the only known source of this disease.

D. Modes of Transmission

Hepatitis C is a bloodborne pathogen, it is predominantly spread via percutaneous exposure to contaminated blood or blood products. Currently, the most prevalent mode of transmission is sharing needles or syringes to inject drugs. Blood transfusions pose an extremely limited risk now, but for those patients who received a blood transfusion prior to June 1992, the risk was approximately 1 in 200 transfused units. Sexual transmission of hepatitis C does occur, but does not appear to be efficient. Other potential risks for transmission include long-term hemodialysis, sharing straws for intranasal cocaine use, vertical (mother to infant) transmission, occupational blood exposure, and tattooing or body piercing with non-sterilized equipment. Hepatitis C is not spread via casual contact, kissing, sneezing, hugging, sharing glasses or utensils, or breast milk.

E. Incubation Period

The incubation period for hepatitis C ranges from 2 weeks to 6 months, with an average incubation period of 6 to 7 weeks.

F. Infectious Period

Infectiousness with HCV is variable; anyone with a positive test for HCV antibody should be considered infectious. The virus can usually be detected in an infected person’s blood within 1 to 3 weeks after the initial

exposure. The degree of correlation between quantity of circulating virus and infectiousness is not clearly established.

G. Epidemiology

Hepatitis C has a worldwide distribution. In the United States an estimated 4,000,000 people are infected with HCV. It is thought that there are currently about 30,000 new cases of hepatitis C infection each year. HCV infection occurs among persons of all ages, with the highest incidence of acute hepatitis C (new cases) occurring among persons aged 20 to 39 years. Prevalence is highest among groups with specific risk factors, especially injection drug users, patients with hemophilia or on long-term hemodialysis, prisoners, and people who received blood or organ products prior to June 1992. The risk of occupational exposure for healthcare workers has been estimated to be 1.8% per incident of hollow-bore needlestick exposure to HCV-infected blood. Perinatal transmission is estimated as being about 5%, although if the mother is coinfected with HIV, the risk may be increased to approximately 15–25%.

There has been a sharp increase in *reporting* of HCV infection in Massachusetts recently. Most of these newly reported cases are not people with new (acute) disease, but those with chronic infection. There is a large population of undiagnosed people who were infected in the past.

2) REPORTING CRITERIA AND LABORATORY TESTING SERVICES

A. What to Report to the Massachusetts Department of Public Health

Report any case with a positive result on any of the following tests:

- EIA (ELISA) HCV antibody
- RIBA
- Viral RNA by RT-PCR or bDNA

Note: Please feel free to consult with the HCV epidemiologist at the Division of Epidemiology and Immunization at (617) 983-6800 or (888) 658-2850 for assistance in interpreting laboratory results or if you have any other questions regarding a case of hepatitis C infection. See Section 3) C below for information on how to report a case of HCV infection.

B. Laboratory Testing Services Available

The Massachusetts State Laboratory Institute does not provide routine HCV antibody testing for the general public. Testing is generally conducted through hospital and commercial clinical laboratories.

3) DISEASE REPORTING AND CASE INVESTIGATION

A. Purpose of Surveillance and Reporting

- To provide information to HCV-infected persons on how to prevent exposing others.
- To identify HCV-infected patients to ensure that they are educated on the need for medical evaluation, how to reduce disease progression, and to provide referrals to medical or support services.
- To determine the prevalence of HCV in specific populations and geographic locations to better inform HCV prevention and service activities.

B. Laboratory and Healthcare Provider Reporting Requirements

Refer to the lists of reportable diseases (at the end of this manual's Introduction) for information.

Note: If a healthcare provider is reporting, ask him or her to inform the patient that someone from the local board of health will be contacting them for follow-up.

C. Local Board of Health Reporting and Follow-Up Responsibilities

1. **Reporting Requirements**
   Massachusetts Department of Public Health (MDPH) regulations (*105 CMR 300.000*) stipulate that each local board of health (LBOH) must report the occurrence of any case of hepatitis C, as defined by the reporting criteria in Section 2) A above. Current requirements are that cases be reported to the MDPH Division of Epidemiology and Immunization, Surveillance Program using an official MDPH *Hepatitis C Case Report* form (in Appendix A). Refer to the *Local Board of Health Reporting Timeline* (at the end of this manual's introductory section) for information on prioritization and timeliness requirements of reporting and case investigation.

2. **Case Investigation**
   a. It is the LBOH responsibility to complete a MDPH *Hepatitis C Case Report* form (in Appendix A) by interviewing the case and others (such as the diagnosing healthcare provider) who may be able to provide the pertinent information. Much of the information required on the form can be obtained from the case's healthcare provider or the medical record.

   b. Please see Attachment B (at the end of this chapter) for a checklist to assist investigations of hepatitis C cases by local boards of health. It suggests a sequence for investigation, recommended elements of investigation, and information that should be reviewed with each case. This checklist is for LBOH use only–it is not required and does not need to be submitted with the case report, although you may wish to keep it in your file to document your investigation.

   c. Use the following guidelines to assist in completing the *Hepatitis C Case Report* form:
      1) Begin the investigation by contacting the diagnosing healthcare provider to verify the diagnosis. This will ensure that the healthcare provider has an opportunity to provide the test results to the case before the LBOH contacts him/her.
      2) If the healthcare provider cannot be reached, leave a message indicating that the board of health will be contacting the case and the case should be informed of the diagnosis or test results. A minimum of 1 week should be allowed for the healthcare provider to get in touch with the patient. If the report came from a laboratory and the healthcare provider is not known, contact the laboratory (before contacting the case) in order to identify which specific tests were used for the diagnosis prior to contacting the patient.
      3) Prioritize acute cases for investigation. (*Note:* See the "Additional Information" section at the end of this chapter for the acute case definition.) If the lab work indicates that the case is probably acute, a more involved investigation is warranted. This means that additional effort should be made to contact the patient, the diagnosing healthcare provider or laboratory to obtain information for the report form in a timely way. It is especially important to obtain lab results for liver function tests, HAV IgM test, and IgM anti-HBc or HBsAg for these cases, as the MDPH will be unable to confirm the case as acute without these. If serum aminotransferase levels are reported, it is important to ensure that either the case report form or the lab reports indicate the normal range of the test(s).
      4) Be sure to record accurately the date of diagnosis, whether this is a new diagnosis, what related lab work was performed, demographic information, and risk-related information (*e.g.*, the ways that the case may have been exposed to HCV). If possible, document when the person may have been infected (*e.g.*, indicate if the original exposure occurred recently or years ago).
      5) If the only tests available are PCR for viral RNA or RIBA tests, these are considered confirmatory if positive. If the laboratory test information comes from the medical provider and you do not have a hard copy of the test results, indicate in the "Comments" section at the end of the case report that lab results were provided or confirmed by the case's healthcare provider.
      6) Only contact the patient for follow-up if there is a positive EIA and/or supplementary test. If an initial EIA is shown to be false-positive via negative supplementary testing, do not contact the case.

7) Some questions on the report form are quite personal and should be asked in a sensitive way. Ask questions about sexual behavior and drug use to determine potential sources for transmission. Ask about alcohol use to identify if health education is needed and to assess other possible causes of liver damage. The comment section can be used to communicate any relevant information about the case to the MDPH, including investigation information (*e.g.,* attempts to contact individual).
8) Reassure the patient that all information is kept strictly confidential. For all of the risk-related questions on the report form, it is essential that the investigator not assume the cases' risk. Get the information concretely from the individual, their medical provider(s) or indicate that the risk is unknown for that case. Other than obtaining the information (where possible) and providing related health education, the board of health does not have further responsibility in relation to this information.
9) Educate the patient about preventing transmission and ways to protect her/his liver. Encourage him/her to speak to any people that may have been exposed to his/her blood since the time they are estimated to have been exposed, infected or seroconverted.
10) Attach the original or a copy of the lab reports to the case report form. If the only lab result available is an EIA HCV antibody test, it will be important, when possible, to obtain and document any supplementary tests conducted (*e.g.,* RIBA or PCR for viral RNA). Without a supplementary test, no case will be considered confirmed. Discuss this with the medical provider or the reporting laboratory. (Often labs will retain specimens for testing later, so contacting them will allow you to determine if additional tests were performed).
11) If you have made several attempts to obtain case information, but have been unsuccessful (*e.g.,* the case or healthcare provider does not return your calls or respond to a letter, or the case refuses to divulge information or is too ill to be interviewed), please fill out the form with as much information as you have gathered. Please note on the form the reason why it could not be filled out completely.

d. After completing the form, attach lab report(s) and mail (in an envelope marked "Confidential") to the MDPH Division of Epidemiology and Immunization, Surveillance Program. The mailing address is:

MDPH, Division of Epidemiology and Immunization
Surveillance Program, Room 241
305 South Street
Jamaica Plain, MA 02130

e. Institution of disease control measures is an integral part of case investigation. It is the LBOH responsibility to understand, and, if necessary, institute the control guidelines listed below in Section 4), Controlling Further Spread.

4) CONTROLLING FURTHER SPREAD

A. Isolation and Quarantine Requirements (*105 CMR 300.200*)

Minimum Period of Isolation of Patient

No restrictions except for exclusion from organ and blood donation and counseling to modify activities in order to prevent transmission.

Note: Sexual transmission of hepatitis C does occur, but it does not appear to be efficient. Although not currently required, the MDPH also recommends that cases be advised against semen or egg donation.

Minimum Period of Quarantine of Contacts

Personal surveillance for high-risk contacts. (Personal surveillance is defined as the practice of close medical or other supervision of contacts without restricting their movements in order to promote recognition of infection or illness.)

B. Protection of Contacts of a Case

Standard precautions for cases are recommended to prevent exposing others to blood and body fluids. IG prophylaxis is not effective and is not recommended for contacts of HCV-infected individuals.

C. Managing Special Situations

There are no specific regulations regarding HCV infection in daycare, school or community residential programs. HCV is not spread via casual contact or through food or water. As long as standard precautions are maintained, HCV will not be spread to others in these settings. No one who is HCV-infected should be excluded from attending or working in any of these settings on the basis of their HCV infection.

D. Preventive Measures

The role of the local board of health in managing hepatitis C is largely educating infected persons how to care for themselves and avoid spreading infection to others. Little epidemiologic investigation is required except data collection for case reports. Prevention and education includes information on how the disease is transmitted, how to avoid transmitting it, and how patients can protect themselves from other potential sources of liver damage.

Offer the information and support below to newly identified cases.

1. Provide basic instruction on transmission of HCV and emphasize the need for ongoing medical evaluation. Treatment is available and the case should be referred to their health care provider for treatment options.
2. If the patient is a current injection drug user, provide referrals to needle exchange programs and drug treatment programs. This will help prevent the spread to other individuals.
3. Educate on the need to completely abstain from alcohol to help protect the liver. If a case needs or wants support to stop drinking, provide referrals to appropriate treatment or support services.
4. Discuss medications that should be avoided (*e.g.,* acetaminophen) as high doses of them can damage the liver. All cases should discuss any medications (including over-the-counter medications) and dietary supplements and herbs with a healthcare provider prior to taking them to be certain they will not damage their liver.
5. Provide information on hepatitis A and B immunization. (Refer to the Hepatitis A and B chapters in this manual.)
6. Discuss sexual transmission of HCV. Indicate that HCV may be transmitted during sex. All contact with blood during sex should be avoided. Emphasize latex barrier protection as a way to prevent the spread of HCV, as well as being a way to prevent the exposure to and transmission of other pathogens.
7. Discuss household transmission of HCV. Household transmission is rare, but to ensure that it does not happen, the case should not share razors, toothbrushes, nail clippers, or any other item that could be contaminated with blood with other household members.
8. Inform the case that they should not be restricted from working, preparing food, or taking part in their daily activities unless they have specific symptoms that make it difficult to do so. There are no recommendations suggesting that HCV-infected persons change their exercise routines or have any dietary restrictions.
9. Copies of the *Hepatitis C Public Health Fact Sheet* for the general public can be obtained from the Division of Epidemiology and Immunization by calling (617) 983-6800 or (888) 658-2850, or through the MDPH website at <http://www.state.ma.us/dph/>. Click on the “Publications” link and scroll down to the Fact Sheets section.

ADDITIONAL INFORMATION

The following is the formal CDC case definition for acute HCV infection. It is provided for your information only and should not affect the investigation or reporting of a case that fulfills the criteria in Section 2) A of this chapter. (CDC case definitions are used by the state health department and CDC to maintain uniform standards for national reporting.) For reporting a case to the MDPH always use the criteria outlined in Section 2) A. (The CDC does not currently have guidelines for the reporting of non-acute hepatitis C infection.)

Clinical case definition for acute HCV infection
An acute illness with a) discrete onset of symptoms and b) jaundice or elevated serum aminotransferase levels.

Laboratory criteria for diagnosis of acute HCV infection
- Positive HCV antibody test verified with a supplemental test (*e.g.,* RIBA or PCR for viral RNA).
- Serum aminotransferase levels at least 2.5 times the upper limit of normal.
- Negative for IgM anti-HAV.
- Negative for IgM anti-HBc (if done) or HbsAg.

REFERENCES

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CDC. Recommendations for Prevention and Control of Hepatitis C Virus (HCV) Infection and HCV-Related Chronic Disease, *MMWR*. 1998; 47:RR-19.

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National Institutes of Health. Management of Hepatitis C. *NIH Consensus Statement*. March 24-26, 1997; 15(3):1-41.

Attachment A: Chronology of HCV Infection Progression (1 page)

Attachment B: Hepatitis C Case Investigation Checklist (3 pages)

Attachment C: Sample Letter for Contacting Healthcare Providers (1 page)

Attachment D: Sample Letter for Contacting Cases (1 page)

Note: These attachments are separate PDF files. To access them, go back to the *Guide to Surveillance and Reporting* main page, and click on the H–K drop down menu. Each attachment is listed under Hepatitis C.